

GRINBERG, A.A.; SHAGISULTANOVA, G.A.; GEL'FMAN, M.I.

Instability constants of platinum complexes. Izv. AN SSSR. Otd.khim. nauk
no.4:585-596 Ap '63. (MIRA 16:3)

1. Leningradskiy tekhnologicheskii institut im. Lensoveta.
(Platinum compounds)

GRINBERG, A.A.; PETRZHIK, G.I.; Primal uchastiye YEVTEYEV, L.I.

Additional data on the solubility of tetravalent uranium
oxalate. Radiokhimiya 5 no.3:319-329 '63. (MIRA 16:10)

(Uranyl oxalate) (Solubility)

VARSHAVSKIY, Yu.S.; IN'KOVA, Ye.N.; GRINGER, A.A.

Infrared spectra and the structure of the glycolate derivatives of
bivalent platinum. Zhur. neorg. khim. 8 no.12:2659-2667 1963.
(MIRA 17:9)

GRINBERG, A.A.; GIL'DENGERSHEL', Kh.I.; PANTELEYEVA, Ye.P.

Acidic-basic properties of geometrically isomeric compounds.
Zhur. neorg. khim. 8 no.10:2226-2231 0 '63. (MIRA 16:10)

(Complex compounds) (Isomerism)

GRINBERG, A.A., akademik; ADRIANOVA, O.N.; YUAN' KAN [Yuan K'ang]

Proof of the configuration of cis-trans isomeric compounds
[PtCl₂(NH₃)₂]Cl₂. Dokl. AN SSSR 149 no.4:842-845 Ap '63.
(MIRA 16:3)

1. Institut obshechey i neorganicheskoy khimii im. M.S.Kurnakova
AN SSSR i Leningradskiy tekhnologicheskij institut im. Lensoveta.
(Platinum compounds) (Glycols) (Isomerism)

GRINBERG, A.A., akademik

Relation between the stability and reactivity of complex compounds. Dokl. AN SSSR 149 no.5:1074-1077 Ap '63.

(MIRA 16:5)

1. Leningradskiy tekhnologicheskij institut im. Lensoveta.
(Complex compounds)

GRINBERG, A.A., akademik; GEL'FMAN, M.I.

Stability of complex compounds of bivalent platinum of the
monamine and triamine types. Dokl. AN SSSR 150 no.2:305-308
My '63. (MIRA 16:5)

1. Leningradskiy tekhnologicheskii institut im. Lensoveta.
(Platinum compounds) (Amino group)

GRINBERG, A.A., akademik; DOBROBORSKAYA, A.I.

Difference of reactions of geometrically isomeric compounds
[PtA₂X₄]. Dokl. AN SSSR 152 no.3:615-616 S '63. (MIRA 16:12)

1. Leningradskiy tekhnologicheskij institut im. Lensoveta.

CRINBERG, A.A., akademik; GEL'FMAN, M.I.

Stability of complex platinous compounds of the diacidodiamine
type. Dokl. AN SSSR 149 no.6:1328-1331 Ap '63. (MIRA 16:7)
(Platinum compounds) (Amines)

GRINBERG, A.A., akademik; IN'KOVA, Ye.N.; VARSHAVSKIY, Yu.S.

New modification of cis-platodiglycine. Dokl. AN SSSR 150
no.4:805-808 Je '63. (MIRA 16:6)

(Platinum compounds) (Glycine)

GRINBERG, A.A., akademik; POSTNIKOVA, Ye.S.

Instability constants of geometrically isomeric platodiamines.
Dokl. AN SSSR 153 no.2:340-341 N '63. (MIRA 16:12)

1. Leningradskiy tekhnologicheskij institut im. Lensoveta.

GRINBERG, A.A., akademik; KISELEVA, N.V.; GEL'FMAN, M.I.

Instability constants of palladium complexes. Compounds of
the $K_2[PdX_4]$ type. Dokl. AN SSSR 153 no.6:1327-1329 D '63.
(MIRA 17:1)

GRINBERG, A. A., Leningrad

"Glykokoll-verbindungen des vierwertigen platins."

report submitted for 8th Intl Conf on Coordination Chemistry, Vienna, 7-11 Sep
64.

GRINBERG, Aleksandr Abramovich

"On the instability constants of mixed complexes of platinum."

report submitted for Symp on Coordination Chemistry, Tihany, Hungary,
14-17 Sep 64.

GRINBERG, A.A.; KOLOBOV, N.P.

Ratio of tetramines of the composition $[Pt(NH_3)_4Cl_2](NO_3)_2$
to cation exchangers of the KU-2 type. Zhur. neorg. khim.
9 no.2:491-494 F'64. (MIRA 17:2)

main body, a.s.: D. ...

del. ...
solutions. ...

GRINBERG, A.A., akademik; YUAN' KAN [Yüan K'ang]

Triglycocholates of tetravalent platinum. Dokl. AN SSSR 154 no.1:
136-139 Ja'64. (MIRA 17:2)

1. Leningradskiy tekhnologicheskii institut im. Lensoveta.

GRINBERG, A.A.

Explanation of the saturation of the drift velocity of current carriers in piezoelectric semiconductors. Dokl. AN SSSR 155 no.6:1293. Ap '64. (MIRA 17:4)

1. Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR.
Predstavleno akademikom B.P.Konstantinovym.

GRINBERG, A.A., akademik; VARSHAVSKIY, Yu.S.

Acidic properties of ammoniates and the deformation vibration
frequencies of coordinated ammonia molecules. Dokl. AN SSSR
159 no.5:1072-1074 D '64 (MIRA 18:1)

GRINBERG, A.A. akademik; YUAN' KAN (Yüan K'ang); VARSHAVSKIY, Yu.S.

New geometric isomers $[Pt_2Cl_2Cl_2]$. Dokl. AN SSSR 154
no.2:375-378 Ja'64. (MIRA 17:2)

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|---|------------|------------------------------|--|
| L 65125-65 EMT(m)/EPF(c)/EMP(j) RM | | UR/0286/65/000/013/C068/0068 | |
| ACCESSION NR: AP5021593 | | | |
| AUTHORS: Grinberg, A. A.; Bebikh, G. F.; Makarova, I. M.; Shapiro, A. L.; Satsuk, I. S. | | | |
| TITLE: A method for protecting rubbers. Class 39, No. 172482 | | 37 B | |
| SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 68 | | | |
| TOPIC TAGS: rubber, rubber chemical, organic chemistry, oxidation, fatigue, cracking | | | |
| ABSTRACT: This Author Certificate presents a method for protecting rubbers made of natural and synthetic materials against nitrogen cracking, thermal oxidation, and fatigue by introducing paraphenylenediamine derivatives into the rubber mixture. To increase the assortment of stabilizers 4-methoxy-4'-isopropylamino-diphenylamines are used as the paraphenylenediamine derivative. | | | |
| ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy (Scientific-Research Institute of Rubber and Latex Products) | | | |
| SUBMITTED: 30Oct64 | ENCL: 00 | SUB CODE: OC, MT | |
| NO REF SOV: 000 | OTHER: 000 | | |
| Card 1/1 222 | | | |

GRINBERG, A.A.; MARCHAK, Ye.M.; LYUBOMIROVA, E.N.

Reaction of potassium chloroplatinate with rergalite. Zhur.
neerg. knim. 10 no.3:717-718 Mr '65. (MIRA 18:7)

GRINDANG, A.A., akademik; KOS'CHINA, M.A.

Isotopic exchange reactions in Koss's-type salts. Dokl. AN SSSR
160 no.6:1315-1318 F '65.

(MIRA 18:2)

GRINBERG, A.A., akademik; GIL'FMAN, N.S.

Separation of isomeric diamines of bivalent platinum and of products of their reaction with thiourea. Dokl. AN SSSR 191 no.3 601-602 Mr '65. (MIRA 18:4)

BEBIKH, G.F.; GRINBERG, A.A.

Synthesis of N-substituted aromatic amines. Dokl. AN SSSR 161
no.6:1333-1335 Ap '65. (MIRA 18:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i
Nauchno-issledovatel'skiy institut rezinovykh i lateksnykh izdeliy.
Submitted October 1, 1964.

GRINBERG, A.A., akademik; VARSHAVSKIY, Im.S.

Coordination sensitivity of the frequency of wagging vibrations of the amino group in the spectra of cyclic ethylenediamine complexes. Dokl. AN SSSR 163 no.3:646-649 J1 '65. (MIRA 18:7)

1. Leningradskiy tekhnologicheskii institut im. Lensoveta.

GRINBERG, A.A.; KOLOBOV, N.P.

Interaction between triamines $[\text{Pt}(\text{NH}_3\text{Cl})_3]\text{Cl}$ and cation
exchanger KU-2. Zhur.neorg.khim. 11 no.1:39-42 Ja '66.
1. Submitted April 6, 1965. (MIRA 19:1)

ACC NR: AP6009488 ETP(M)/EWP(J)/T IJP(c) RM UR/0020/66/167/001/0099/0101

AUTHOR: Grinberg, A.A. (Academician); Babitskiy, B.D.; Bezhan, I.P.; Varshavskiy, Yu.S.; Gel'fman, M.I.; Kiseleva, N.V.; Kormer, V.A.; Smolen-
skaya, D.B.; Chesnokova, N.N. 33-8

ORG: All-Union Scientific Research Institute for Synthetic Rubber im. S.V. Lebedev (Vsesoyuzn y nauchno-issledovatel'skiy institut sinteticheskogo kaukukha); Institute of General and Inorganic Chemistry im. N.S. Kurnakov of the AN SSSR (Institut obshchey i neorganicheskoy khimii AN SSSR)

TITLE: The effect of the composition of rhodium(III) complexes on their catalytic activity in the process of stereospecific polymerization of butadiene-1,3 in an aqueous medium 44.56

SOURCE: AN SSSR. Doklady, v.167, no.1, 1966, 99-101

TOPIC TAGS: rhodium compound, polymerization catalyst, butadiene, aqueous solution

ABSTRACT: The complexes to be investigated, synthesized by known methods, were analyzed for their rhodium and halide content. The polymerization was carried out by methods described in a previous article. A table shows results of using fifteen different rhodium complexes as catalysts in the polymerization of butadiene in an aqueous emulsion at 50 and 70°C. It follows from these results that the gradual replacement of

Card 1/2 UDO: 66.095.264:678.672:661.897 2

ACC NR: AP6009488

of chlorine ions by ammonia molecules leads to a decrease in the polymerization rate. The catalytic activity of bromine derivatives also decreases with an increasing accumulation of ammonia molecules in the inner sphere of the complex. Comparison of the catalytic effect of the halides of rhodium shows that the chlorides and the bromides of rhodium have almost identical catalytic ability and stereospecificity. The iodide is inactive at 500, while in its presence at 700 there takes place a polymerization process of the free radical type. With the presence of three ammonia molecules in the inner sphere of the iodide the polymerization proceeds by a coordination-ionic mechanism. Results also show that the stereospecific polymerization of butadiene in the presence of the Rh^{3+} complexes studied leads to the formation of trans-1,4-polybutadiene, regardless of the number and nature of the bonds. Orig. art. has: 1 figure and 1 table.

SUB CODE: 07/ SUBM DATE: 12Jul65/ ORIG REF: 003/ OTH REF: 005

Card 2/2 1045

GRINBERG, A.B.

[X-ray diagnosis of occupational diseases] Rentgenodiagnostika
professional'nykh boleznei. Leningrad, Medgiz, 1958. 250 p.
(DIAGNOSIS, RADIOSCOPIC) (OCCUPATIONAL DISEASES)(MIRA 11:9)

ALMAZOV, A.M. [Almazov, O.M.]; GRINBERG, A.D. [Grinberg, H.D.]

Effect of river discharge on the salinity and the ratio of ion
concentrations in waters of the northwestern part of the Black Sea.
Nauk.zap.Od.biol.sta. no.2:55-67 '60. (MIRA 14:11)
(BLACK SEA--SALINITY)

GRINBERG, A.D.

Dynamics of desorption from solution. M. V. Teylin and A. D. Grinberg (Inst. Improvement Purgists, Kiev). Zhur. ~~1955-56~~ 1955-56(1632). Birch C, activated by CO₂ at 1000° until its porosity was 60.2-67.9%, was said with I from a soln. in 0.1 N KI. The adsorbed amt. a (mg. I for g. C) was 230 when the equil. concn. of I in the soln. was < 0.1 mg./l., 800 at c = 0.4 g./l. and 1100 at 7 g./l. Then the C was washed with 0.1 N KI soln. No I could be displaced as long as a was less than 230. The rate of desorption is said to be $u = ce^{a-b}$; u and data con. t. However, u was greater when a definite a was reached by adsorption than when it was reached by partial desorption starting from a greater a. This shows that at high a, the rate of desorption is detd. by the diffusion in the pores rather than between the C particles. When the rate of mixing of the KI soln. (through 2.5 g. C) was varied between 5 and 200 ml./min. $u = ka^b$; k and b were independent of a, but b increased with a. This shows that, at not too great a, u is detd. by the diffusion between the C grains. The amt. of I which could not be displaced was smaller, the greater was v (no quant. data in the original). Increase of temp. from 10° to 40° raised u 2.5-fold; however, when v was adjusted so that the Reynolds no. was identical at different temps., u was almost independent of temp. Probably the measured u is smaller than the real rate of desorption, because the I desorbed from one patch on the adsorbent is re-adsorbed by another patch. J. J. Bikerman

GRINBERG, A.D.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 13/26

Authors : Grinberg, A. D.; Strazhesko, D. N.; and Tovbin, M. V.

Title : Reasons for the retentiveness of porous adsorbents

Periodical : Zhur. fiz. khim. 28/1, 81-86, Jan 1954

Abstract : The kinetics of iodine desorption from activated carbon by means of a CCl_4 stream at small adsorption values (lower retentiveness of the carbon) was investigated by the marked atom method. The rate of desorption at such values was determined by diffusion factors, which indicates that the retentivity of porous adsorbents is due not to the special state of the substance adsorbed at small surface charges but to the migration conditions of the adsorbed substance from the micropores to the surface of the adsorbent. The kinetics of isotopic exchange between the iodine adsorbed by the carbon and the iodine dissolved in CCl_4 was investigated and it was found that this exchange takes place as result of the adsorption and desorption processes. Seven references : 6-USSR and 1-English (1923-1952). Tables; graphs.

Institution : Acad. of Sc.Ukr-SSR, The L. V. Pisarzhevskiy Institute of Physical Chemistry
Submitted : March 7, 1953

Grinberg, A. D.

USSR/Chemistry - Dynamics

Card 1/1 Pub. 147 - 7/25

Authors : Tovbin, M. V., and Grinberg, A. D.

Title : The dynamics of desorption from porous adsorbents

Periodical : Zhur. fiz. khim. 28/10, 1755-1764, Oct 1954

Abstract : Applying the method of quasi-stationary concentrations the authors derived equations for the rate of desorption of a substance from a porous adsorbent. The accuracy of these equations was confirmed by results obtained in studying the kinetics of iodine desorption from a layer of activated carbon one grain in thickness. The effect of numerous factors on the dynamics of the iodine desorption process, from activated carbon by means of the flow of the solvent, was investigated. The effect of various factors on the retentivity of the carbon in relation to the iodine is explained. It is shown that the retentivity of the adsorbent can be affected by the change in porosity of adsorbent and by adding surface active substances. Eleven USSR references (1929-1954). Tables; graphs; diagram.

Institution : The Auto-Highway Institute, Kiev

Submitted : February 21, 1953

TOYBIN, M.V.; GRINBERG, A.D. [Hrinberh, A.D.]

Dynamics of iodine desorption from activated coal. Nauk.zap.Kyiv.un.
16 no.15:39-43 '57. (MIRA 11:11)
(Iodine) (Sorption) (Carbon, Activated)

GRINBERG, A. G.

Grinberg, A. G. - "Changes of vegetative skin innervation in certain surgical diseases of the internal organs," Report 1, "Electro-conductivity of skin in chronic appendicitis," In the symposium: V. N. Shamov, Kiev, 1949, p. 19-24

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

GRINBERG, A. G. Dozent

"Iontophoresis in Atrophies of the Optic Nerve," Vest. Oftalmol., 28,
No.3, 1949.

Physiotherapeutics Dept., Kazan Med. Inst.

GRINBERG, A.G.

Experience with therapy of chronic osteomyelitis caused by gunshot wounds in veterans of the Second World War. Ortop.travm. i protez. no.5:26-29 S-0 '55. (MLRA 9:12)

1. Iz Khar'kovskogo oblastnogo gosptalya (nach. - A.I.Petrov) dlia invalidov Otechestvennoy Voyny.

(OSTEOMYELITIS, etiology and pathogenesis
gunshot inj., ther. in veterans of World War II in Russia)

(VETERANS, diseases
osteomyelitis caused by gunshot in World War II, ther.
in Russia)

GRINBERG, A.I.

Tertian malaria with prolonged incubation in Kishenev. Med. paras. 1
paras. bol. no.3:216-219 J1-S '54. (MIRA 8:2)

1. Iz Kishenevskoy gorodskoy protivomalyariynoy stantsii.
(MALARIA,
tertian, epidemiol. in Russia, malaria with prolonged
incubation)

GRINBERG, A.I.

Incidence of quartan malaria in Kishinev. Med.paraz.i paraz.bol.
no.5:580-584 '61. (MIRA 14:10)

1. Iz Kishinevskoy gorodskoy sanitarno-epidemiologicheskoy
stantsii.

(KISHINEV--MALARIA)

GRINBERG, A. I.

Electric Relays

Simplifying the design of relay panels. Elek. sta. 23 no. 3, 1952. Inzh

SO: Monthly List of Russian Accessions, Library of Congress, July 195², Uncl.

GRINBERG, A. I.

U S S R .

621.311.171 : 621.311.22
2167. Layout of electrical equipment in the main bays of electric power stations of low and medium ratings. A. I. GRINBERG, A. F. KUZ'KOV AND V. N. SKOROKHOV. *Elektr. Stantsii*, 1954, No. 10, 25-8. In Russian.

Designs for 8-12 MVA steam power stations with two turbogenerators are examined. Grouping of all electric switchgear (6-6 kV distribution, 400/230 V auxiliary service, generator control and service transformers) in a single bay adjacent to generators results in savings in cables, conduits, operating personnel and in an improved appearance. Elimination of station battery and an a.c. control are proposed. In case of station service failure an independently driven generator set would be automatically started.

I. LUKASZEWICZ

GRINBERG, A.I.

Determination of alcohol by the method of salting out in legal
chemical investigations of biological material. Sud.-med. eks-
pert. 2 no.2:30-34 Ap-Je '59. (MIRA 13:6)

1. Laboratoriya Leningradskogo gorodskogo byuro sudebnomeditsin-
skoy ekspertizy (nachal'nik - kand.med.nauk M.A. Dal').
(ALCOHOL--ANALYSIS) (CHEMISTRY, LEGAL)

KALITA, Nikolay Yakovlevich; GRINBERG, A.I., retsenzents; BARABASH, M.M., retsenzents; ZHIGALOV, A.N., dotsent, kand. ekon. nauk, retsenzents; DOSNKOVA, V.Ye., prof. spets. red.; NOZDRINA, V.A., red.; ZARSHCHIKOVA, L.M., tekhn. red.

[Establishing work norms in the meat and dairy industries]
Tekhnicheskoe normirovanie truda v miasnoi i molochnoi promyshlennosti. Moskva, Pishchepromizdat, 1962. 294 p.

(MIRA 16:3)

1. Starshiy inzhener Normativno-issledovatel'skoy laboratorii po trudu Kiyevskogo myasokombinata (for Barabash). 2. Nachal'nik otdela truda i zarabotnoy platy Kiyevskogo myasokombinata (for Grinberg).

(Meat industry--Production standards)

(Dairy industry--Production standards)

GRINBERG, Abram Isakovich, DMITRIYEVA, N.M., red.; POGOSKINA, M.V.,
tekhn. red.

[Helminthiasis in children] Gel'mintozy u detei. Moskva,
Medgiz, 1961. 182 p. (MIRA 15:2)
(WORMS, INTESTINAL AND PARASITIC)

SIMKHOVICH, Ye.I.; GRINBERG, A.I.; RAYTFEL'D, I.M.

Treatment of ascariasis by the method of single-dose piperazine
adipinate administration in the Moldavian S.S.R. Med.paraz.1
paraz.bol. no.3:294-295 '62. (MIRA 15:9)
(PIPERAZINE) (MOLDAVIA--ASCARIDS AND ASCARIASIS)
(ADIPID ACID)

GRINBERG, A.I.; BOKARIUS, V.N.

Review of V.A.Baliakin's book "Toxicology and expertise of
alcoholic intoxication." By A.I.Grinberg, V.N.Boka[REDACTED]
Sud. [REDACTED] ekspert. 6 no.3:59-61 J1-S'63. (MIRA 16:10)
(MEDICAL JURISPRUDENCE) (ALCOHOLISM)
(BALIAKIN, V.A.)

KOLYANDR, L.Ya.; GRINBERG, A.M.; KOLTUN, R.M.; ZASLAVSKAYA, T.I.

Determination of constants of pure o-xylene and the development of indexes for characterization of commercial product. Zhur. Priklad. Khim. 26, 438-442 '53.
(CA 47 no.19:9703 '53) (MLRA 6:4)

1. Kharkov Coke-Chem. Plant.

GRINBERG, A.I.

Calculation of the quantity of ethyl alcohol and its concentration
in the blood. Sud.-med.ekspert. 3 no.1:40-45 Ja-Mr '60.

(MIRA 13:5)

1. Leningradskoye gorodskoye byuro sudebnomeditsinskoy ekspertizy
(nachal'nik M.A. Dal').

(ALCOHOL IN THE BODY)

AUTHOR: Grinberg, A.M. (Ukhin).

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TITLE: Dephenolising coke oven effluents by steaming.
(Obesfenolivaniye stochnykh vod koksokhimicheskikh zavodov parovym metodom).

1. Koks. Chem.
istry. Not.

PERIODICAL: "Koks i Khimiya" (Coke and Chemistry), 1957, No.3,
pp. 34-37 (U.S.S.R.)

ABSTRACT: Equilibrium concentrations of phenols in steam over alkali-phenolate solutions, the influence of the presence of ammonia on the equilibrium concentrations of phenols in steam over alkali-phenolate solutions and the efficiency of removal of phenols with steam in the presence of ammonia were investigated. It was established that the dephenolising process is complicated by the hydrolysis which takes place during the removal of phenols from steam with alkali-phenolate solutions. The presence of volatile ammonia in the effluent causes a decrease in the efficiency of both desorbing and absorbing parts of the scrubber, therefore, the fullest possible removal of ammonia in the evaporating part of the ammonia column is necessary. For the absorption of phenols from steam a multi-stage apparatus is more expedient. In order to improve the efficiency of operation of existing dephenolising plants an improvement in the design of spraying equipment and the use of metallic fillers is considered necessary. There are 3 tables, 4 figures and 4 references, two of which are Russian.

GRINBERG, A.M.

Conference on purification of waste waters from by-product coking
plants in the Ukraine. Koks i khim. no.8:57-58 '58. (MIRA 11:9)
(Sewage--Purification--Congresses) (Ukraine--Coke industry)

GRIGORUK, N.O.; GRINBERG, A.M.

Purification of waste waters from by-product coking plants and
the utilization of valuable products contained in them. Zhur.
VKHO 5 no.1:52-60 '60. (MIRA 14:4)
(Coke industry—By-products)
(Sewage—Purification)

GRINBERG, A.M.

Interfactory school for the operators of dephenolizing plants.
Koks i khim. no.5:50-52 '60. (MIRA 13:7)

1. Ukrainskiy uglekhimicheskiy institut.
(Coke industry—Study and teaching)
(Phenols)

KHOBOTOVA, N.M., ekskursovod; TROITSKAYA, N.K.; GRINBERG, A.M.; DOMINSKAYA, G.B.; SHUTOV, T.I.

Exhibitions and displays of special items. Inform. biul.
VDNKH no.10:9-11 '63. (MIRA 18:5)

1. Razdel "Priborostroyeniye i sredstva avtomatizatsii" pavil'ona "Mashinostroyeniye" na Vystavke dostizheniy narodnogo khozyaystva (for Khobotova).
2. Glavnyy inzh.-metodist pavil'ona "Mashinostroyeniye" na Vystavke dostizheniy narodnogo khozyaystva (for Troitskaya).
3. Glavnyy metodist razdela "Geologiya" ob'yedinennogo pavil'ona "Toplivnaya promyshlennost' i geologiya" na Vystavke dostizheniy narodnogo khozyaystva SSSR (for Dominskaya).
4. Direktor pavil'ona "Molochnaya promyshlennost'" na Vystavke dostizheniy narodnogo khozyaystva SSSR (for Shotov).

VINAROV, I.V.; GRINBERG, A.N.

Isotherms of ion exchange sorption of zirconium and hafnium
on a KU-2 cation exchanger. Ukr. khim. zhur. 29 no.10:1013-
1015 '63. (MIRA 17:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR,
laboratorii v Odesse.

ACCESSION NR: AP4033697

8/0073/64/030/004/0359/0365

AUTHOR: Vinarov, I. V.; Grinberg, A. N.

TITLE: The kinetics of ion exchange sorption of zirconium and hafnium on KU-2 cationite

SOURCE: Ukrainskiy khimicheskij zhurnal, v. 30, no. 4, 1964, 359-365

TOPIC TAGS: KU 2 cationite, zirconium sorption, hafnium sorption, kinetics, particle size, mixing intensity, reaction constant, activation energy

ABSTRACT: The kinetics of ion exchange sorption of zirconium and hafnium oxy-chlorides in dilute (1.5N) HNO_3 on KU-2 cationite in the H^+ form were investigated by determining the dependence of the ion exchange sorption rate on temperature, cation particle size and intensity of mixing. Under the experimental conditions a particle diffusion kinetics system appeared to be in effect. This system is described by the semiempirical equation

$$\frac{da}{dt} = Ka-b$$

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ACCESSION NR: AP4033697

a = sorption, t = time, K and b are constants. The constant K was determined for 25, 35 and 45 C temperatures; the apparent energy of activation for the zirconium was calculated to be 3180 cal/mole, for Hf 4090 cal/mol. Intensity of mixing had negligible effect on the exchange rate. The rate of exchange was inversely proportional to the particle size. Orig. art. has: 5 tables and 5 figures.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN SSSR, Laboratorii v Odesse (Institute of General and Inorganic Chemistry AN SSSR, Odessa Laboratory)

SUBMITTED: 06May63

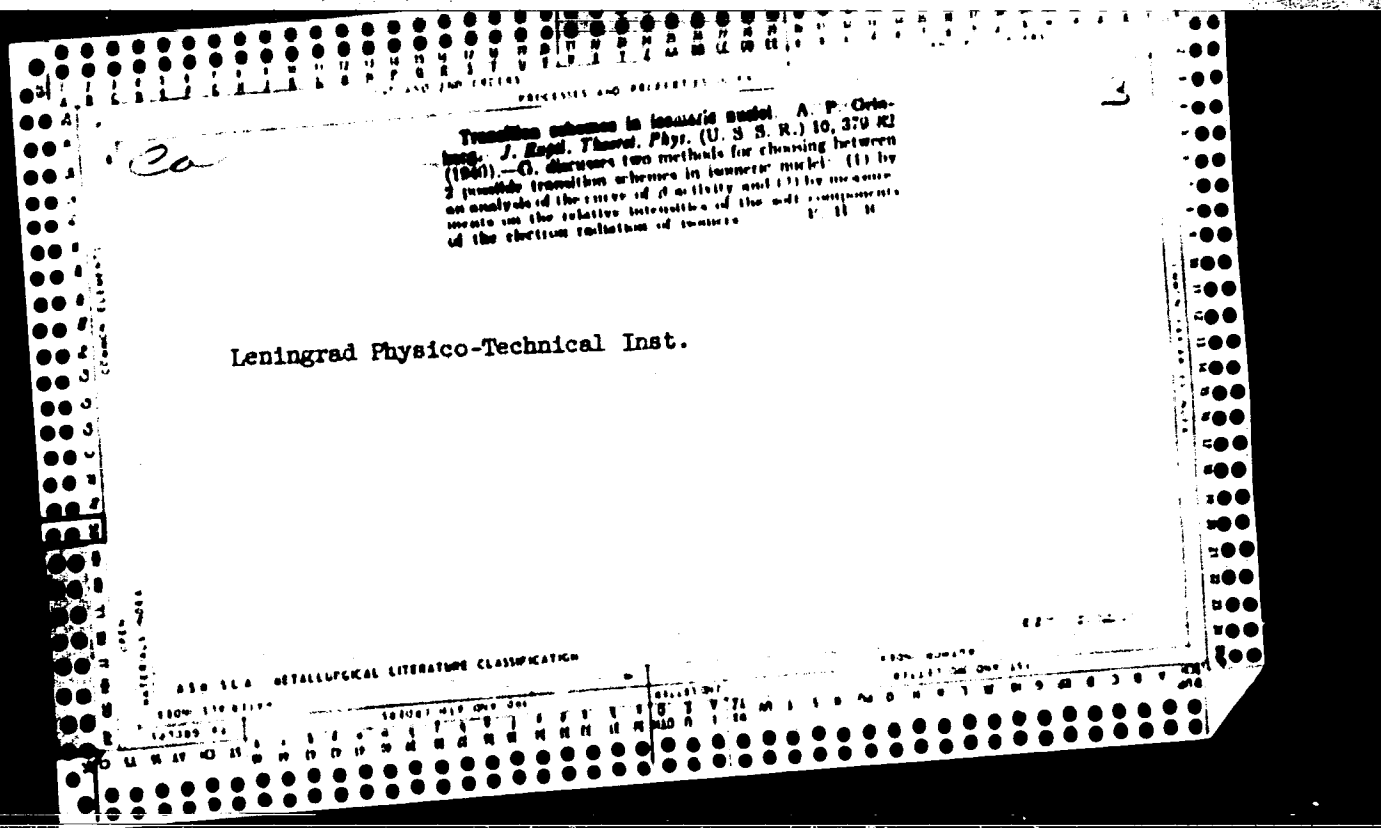
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NO REF SOV: 003

OTHER: 011

Card 2/2



CIA-RDP86-00513R000516830

CA

Isomeric states of atomic nuclei. A. P. Grinberg.
Uspekhi Akad. 10, 294-307(1941).—Review. Data on
isomeric radioactive and stable nuclei are shown in 3 pp
of tables. F. H. Rathmann

AND SLA METALLURGICAL LITERATURE CLASSIFICATION

USSR/Nuclear Physics - Particle Accelerators Jan 49
Nuclear Physics - Elementary Particles

"New Accelerators for Charged Particles (Survey
of Published Data)," A. P. Grinberg, 29 PP

"Zhur Tekh Fiz" Vol XIX, No 1

Discusses two devices for accelerating electrons,
the synchrotron and phasotron, which are varia-
tions on the cyclotron. Gives theory and con-
struction of synchrotron, and description of the
machine in operation. (Continued in next issue.)

24/497105

GRINBERG, A. P.

USSR/Nuclear Physics - Accelerators
Nuclear Physics - Cyclotron

Feb 49

"New Accelerators for Charged Particles (a Synopsis
of Published Material)," A. P. Grinberg, 31 pp

"Zhur Tekh Fiz" Vol XIX, No 2

Explains why cyclotron cannot be used to obtain
superfast particles. Describes phasotron. Includes
12 diagrams. (Second article. See 24/49T105.)

40/49T98

GRINBERG, A. P.

Author: Grinberg, A. P.

Title: Various methods pertaining to the acceleration of charged particles.
(Metody uskoreniia zaryazhen ykh chashtits.) 385 p.

City: Moscow

Publisher:

~~State Printing House~~ State Printing House of Technical and Theoretical Literature

Date: 1950

Available: Library of Congress

Source: Monthly List of Russian Accessions, v. 3, no. 1, page 523

GRINBERG, A. P.

USSR/Nuclear Physics - Gamma Quanta Jul/Aug 53

"Angular Correlation of Gamma Quanta of Ni60, Ba134, Cd114, and Ti48," E. G. Alkhazov, I. Kh. Lemberg and A. P. Grinberg, Phys Tech Inst, Acad Sci USSR

Iz Ak Nauk, Ser Fiz, Vol 17, No 4, pp 487-502

As a method of indirect information on nuclear spins in excited states, the authors applied the measurement of angular correlation of quanta or particles released in cascade. They investigated gamma-gamma correlation between direction of propagation of 2 gamma quanta emitted consecutively by one nucleus. Results confirmed assumption that the spin of first excited level of even-even nucleus equals 2. Rec 16 Jul 53.

272I48

CHUBB 1.2

1 RML

✓ Investigation of several cases of angular correlation.
 A. P. Golberg and I. Kh. Lemberg (Dokl. Akad. Nauk S.S.S.R., Ser. Phys. 19, 300-7 (1966)).—The anisotropy of β - γ angular correlation $W(\theta)$ of the transition $Sb^{124} \rightarrow Te^{124}$ for $E \approx 2.3$ m.e.v. (half of the β -spectrum) has been experimentally detd. with a magnetic spectrometer. A β - and a γ -coincidence counter consisting of a stilbene crystal and a photomultiplier was used. The results can be represented by $W(\theta) = 1 + s \cos^2 \theta$, with $s = -0.438 \pm 0.027$. This does not correspond to calcd. values. With $Mn(Tl)$ crystals the angular correlation of γ -quanta of $Th D$ was also detd. The angular correlation corresponds to spin values of the levels equal to $4, 2, 0$, and to quadrupole transitions. By means of measurements of angular correlation it was shown that in the transition $Zr^{90} \rightarrow Nb^{90}$ to the excited level of Nb^{90} , the following transition to the ground level occurs directly and not in several steps. A. P. Golberg

NU
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① *[Signature]*

Grinberg, A.P.

Coulomb excitation of nuclei by nitrogen ions. D. G. Alkhazov, D. S. Andreev, A. P. Grinberg, and L. S. Grinberg (Leningrad Physico-Math. Inst., U.S.S.R. Acad. Sci., 1957). *Nuclear Phys.* 2, 65 (1957); cf. *U.S.S.R. Acad. Sci. Bull.* 1957. The ratio of cross sections for Coulomb nuclear excitation by heavy ions to those by protons has been compared. It is shown that in many instances it is more probable for heavy ions than protons for Coulomb excitation. Preliminary results with 15.6-m.e.v. N^{14} ions are as follows: Irradiated nuclide (γ -ray energy in e.k.v.): Pr^{142} (240), Na^{23} (335), V^{51} (320), Mn^{55} (427, 500), Ge^{76} (72), Se^{78} (125, 452), Mo^{98} (210, 540), Rh^{103} (293, 358), Ag^{107} (310, 440), Cd^{114} (297, 325, 543), In^{115} (662), Pb^{208} (60, 245), Ta^{181} (134, 501), W^{182} (284, 530), Ph^{209} (590). No γ -rays were observed on bombardment of K, Ni, Cu, Sn, and Bi. R. W. Funk

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6-11A 131 NG, 111

ALKHAZOV, D.G.; ANDREYEV, D.S.; ~~GRIMBERG, A.P.~~; LEMBERG, I.Kh.

Study of the Coulomb excitation of nuclei by means of nitrogen ions.
Izv. AN SSSR, Ser. fiz. 20 no.12:1365-1376 D '56. (MLRA 10:3)

1. Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR.
(Nuclei, Atomic) (Spectrum, Atomic)

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1227
 AUTHOR GRINBERG, A.P., LEMBERG, I.CH.
 TITLE On COULOMB'S Interaction of Nuclei with Heavy Ions.
 PERIODICAL Zhurn. eksp. i teor. fis, 30, 807-808 (1956)
 Publ. 4 / 1956 reviewed 8 / 1956

The energy of the bombarding particle may be considerably increased also without excitation of nuclear reactions for COULOMB'S excitation if accelerated heavy ions are used instead of protons or α -particles. Here the cross section σ_h of the COULOMB excitation of a nucleus by heavy ions is estimated.

Instead of σ_h it is easier to compute (σ_h/σ_p) as a function of $\xi_p = 0,1575z_1z_2\sqrt{\mu_p} \cdot ((E_p - \Delta E)^{-1/2} - E_p^{-1/2})$. Here the index p refers to protons, and z_1 and z_2 denote the number of protons in the bombarding nucleus, i.e. in the target nucleus, μ_p is the mass of the proton expressed in nuclear units of measure. The index h refers to the heavy bombarding particle. We find $\sigma_h/\sigma_p = \mu_h(E_h - \Delta E)f_2(\xi_T)/\mu_p(E_p - \Delta E)f_2(\xi_p)$, and from the corresponding diagram the following conclusions may be drawn: σ_h/σ_p decreases with diminishing E_p , and, if k is given it is largest with $\xi_p \rightarrow 0$, i.e. if E_p is large, and at $0 < \xi_p < 1$ it is considerably larger than 1; the values of σ_h/σ_p increase with growing k and particularly with $\xi_p \rightarrow 0$.

Žurn.eksp.i teor.fiz. 30, 807-808 (1956) CARD 2 / 2

PA - 1227

In medium-sized cyclotrons it is possible to accelerate nitrogen ions with a treble charge from 10 to 30 MeV. On the occasion of the excitation of the first and second excited levels of Ta^{181} the values 75 and 50 respectively are found for σ_h/σ_p . On the occasion of the experimental investigation of

COULOMB interaction thick targets are frequently used in order to obtain an increased yield of γ -quanta. For the ratio of the yields of γ -radiation as a result of COULOMB excitation it applies that

$$Q_h Q_p = \int_{E_h}^0 \sigma_h(E) dE / (dE/dx)_h / \int_{E_p}^0 \sigma_p(E) dE / (dE/dx)_p, \text{ if an equal number of}$$

protons and heavy ions impinge upon the target. On the occasion of the excitation of the first level of the Ta^{181} nucleus by nitrogen ions with $E_h=14,5$ MeV this formula results in $Q_h/Q_p=12$. Thus, though Q_h/Q_p is considerably smaller than σ_h/σ_p if thick targets are used, it nevertheless remains larger than 1.

On the occasion of the passing of charged particles through matter a characteristic X-ray radiation occurs, and in some cases the energy of the X-ray K quanta is near the energy of the γ -quanta emitted by COULOMB'S excitation. In the case of thick Ta-targets the ratio (number of X-ray γ -quanta occurring as a result of the ionization of tantalum atoms by incident particles/ number of 137 keV γ -quanta occurring on the occasion of the employment of nitrogen ions with 15.6 MeV) is 15 times as great as in the case of the employment of 2,1 MeV protons.

INSTITUTION: Leningrad Physical-Technical Institution of the Academy of Science in the USSR.

GRIMBERG, A.P.

Coulomb excitation of nuclei by nitrogen ions. D. G. Arkharov, D. S. Andreev, A. P. Grimberg, and I. Kh. Lemberg. Zhur. Ekspit. i Teor. Fiz. 39, 809-11 (1976). -- Curves are presented for the x-ray K-line of Ta^{III} and the x-rays for excitation with 138- and 301-e.v. N ions, also for Mn^{II} with N ions of energies from 126 to 1200 e.v. Other elements which underwent a Coulomb excitation were Mo^{IV} and Mo^{III}, Fe^{II}, Na^{II}, V^{II}, Ge^{II}, Se^{II}, Rh^{III}, Ag, Cd, In^{III}, 1^{III}, W, Au^{III}, Pb^{II}. No Coulomb excitation could be brought about in K, Ni, Cu, Sn, or Bi. Werner Jacobsen

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GRINBERG, A.F.
ALKHASOV, D.G., ANDREYEV, D.S., GAL'PERIN, L.R., GRINBERG, A.F., GUSINSKIY, G.M.,
LEMBERG, Y.Kh., and YEROKHINA, K.I.

Physical Technical Inst. Acad. Sci. USSR

"Coulomb Excitation of Nuclei (review lecture)

paper submitted at the A-U Conf. on Nuclear Reactions in Low and Medium Energy
Physics, Moscow, 19-27 Nov 57.

GRINBERG, A. P.

5
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✓4067

EXPERIMENTAL STUDY OF COULOMB EXCITATION OF
NUCLEI BY NITROGEN IONS. D. G. Alkharov, D. S.
Andreev, A. P. Grinberg, and I. Kh. Lomberg (Academy of
Sciences, USSR). Soviet Phys. JETP 3, 844-6 (1957) Jan.

An experimental investigation was made of the Coulomb
excitation of the nuclei of 21 elements by nitrogen ions.
The nitrogen ions were accelerated in a cyclotron to 15.6
Mev. The targets were pressed into the bottom of an in-
sulated metallic vessel which served as a Faraday cup. Re-
sultant data are summarized in both graphical and tabular
form. (B.J.H.)

4

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24(3)
AUTHORS: Alkhazov, D. G., Grinberg, A. P., ^{SOV/56-35-4-46,52}
Yerokhina, K. I., ^{Gusinskiy, G.M..} Lemberg, I. Kh.

TITLE: The Coulomb Excitation of Aluminum (Kulonovskoye vzbuzhdeniye alyuminiya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol 35, Nr 4, pp 1055-1056 (USSR)

ABSTRACT: The authors investigated the Coulomb (Kulon) excitation of Al^{27} -nuclei by means of heavy ions which were accelerated in a cyclotron. The ions concerned were 15.9 MeV triple-charged nitrogen ions and triple-charged 18.1 MeV oxygen ions. The γ -radiation occurring during the bombardment of the aluminum was investigated by means of a scintillation- γ -spectrometer with a NaJ(Tl crystal. The investigation method employed and calculation of the values $B(E2)^\uparrow$, i.e. of the reduced probability of a quadrupole transition of a nucleus from the ground state to an excited state has already been described in earlier papers. A diagram shows the γ -radiation spectrum which was produced by a Coulomb excitation of aluminum by

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The Coulomb Excitation of Aluminum

SOV/56-35-4-46/52

nitrogen ions. Two lines with $E = 0.84$ and with 1.01 MeV respectively are observed. The relative intensity of the γ -cascade transition $0.84 + 0.17$ MeV amounts to not more than 4% of the direct transition to the ground level. An attempt to excite the two aforementioned Al^{27} levels by means of nitrogen ions (which were accelerated to 25 MeV) was without success because of the sharp increase of the γ -radiation background (which is due to nuclear reactions). The results obtained when using nitrogen- and oxygen-ions agree well with one another. The values of $B(E2)$ for the levels with $\Delta E = 0.84$ and 1.01 MeV amount to 0.0019 and $0.0031e^2 \cdot 10^{-48} \text{ cm}^4$ respectively. The partial lives of the levels with $\Delta E = 1.01$ MeV and $\Delta E = 0.84$ MeV amount to $1.7 \cdot 10^{-11}$ sec and $3.7 \cdot 10^{-11}$ sec respectively. There are 1 figure and 6 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskii institut Akademii nauk SSSR (Leningrad Physico-Technical Institute of the Academy of Sciences USSR)

Card 2/3

21(8)

AUTHORS:

Alkhazov, D. G., Grinberg, A. P.,
Yerokhina, K. I., Lemberg, I. Kh.

SOV, 56-35-4-47/52
Gusinskiy, G. M.,

TITLE:

The ~~Lifetime~~ of the First Excited Level of Mg^{24} (Vremya zhizni
pervogo vzbuzhdennogo urovnya Mg^{24})

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 35, Nr 4, pp 1056-1058 (USSR)

ABSTRACT:

The investigation of the Coulomb (Kulon) excitation of the
nuclear level makes it possible to calculate its life. For
the transition of even-even nuclei from the ground state
with spin 0 to the first excited level with spin 2 it holds
that

$$1/\tau = 2.46 \cdot 10^{-3} (\Delta E)^5 B(E2)^\uparrow.$$

Here ΔE denotes the level energy in keV, and $B(E2)^\uparrow$ the
reduced probability of the aforementioned transition. Here
 $e^2 \cdot 10^{-48} \text{ cm}^4$ serves as a measuring unit of $B(E2)$. In the
present paper triple-charged nitrogen- and oxygen ions with
energies of 15.9 and 18.1 MeV respectively, and also quadruple-
charged nitrogen ions with 25.6 and 36 MeV are used. Investi-

Card 1/2

The ^{the} Lifetime of/ First Excited Level of Mg^{24}

SOV/56-35-4-47/52

gations are rendered difficult by a permanent parasitic line of 1.37 MeV (which is thus in agreement with the line under investigation). A diagram shows the spectrum obtained by the bombardment of natural magnesium with 15.0 MeV nitrogen ions. According to estimates made by the authors, the maximum error committed when determining the area of the parasitic peak amounts to not more than $\pm 5\%$ of the peak under investigation. The mean value of $B(E2)^\uparrow$, which was determined by 6 different experiments, amounts to $0.054 \text{ e}^2 \cdot 10^{-48} \text{ cm}^4$, from which it follows that $\tau = (1.5 \pm 0.4) \cdot 10^{-12} \text{ sec}$. In conclusion, a short report is given on results obtained by other authors. There are 1 figure and 3 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskii institut Akademii nauk SSSR
(Leningrad Physico-Technical Institute of the Academy of Sciences USSR)

SUBMITTED: July 9, 1958

Card 2/2

24(5)
AUTHORS:

SOV/56-35-6-2/44
Alkhazov, D. G., Grinberg, A. P., Gusinakiy, G. M., Yerokhina, K.I.,
Lemberg, I. Kh.

TITLE:

Coulomb Excitation of High-Energy Nuclear Levels in Even Tungsten
Isotopes (Kulonovskoye vozbuzhdeniye yadernykh urovney s bol'shoy
energiiyey v chetnykh izotcpakh vol'frama)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35,
Nr 6, pp 1325-1334 (USSR)

ABSTRACT:

In their introduction the authors deal in detail with investigations
carried out in this field by other authors (Refs 1-3, 6-11). The
authors themselves already determined even-even nuclei with 15 Mev
 α -particles and excited states with energies of up to 1.5 Mev
(Refs 4,5). Peker (Ref 11) set up schemes of excited levels on the
basis of a generalized nuclear model for W^{184} and W^{186} according
to data obtained from references 9 and 10. Herefrom it follows
that the levels of W^{184} with $\Delta E = 900$ kev and that of W^{186} with
 $\Delta E = 750$ kev are vibration levels (2^+). In the present paper the
authors used the following energies for their investigations for
the excitation of α -particles: 8.5, 10.2, 13.1 and 14.5 Mev. The
particles were accelerated in a cyclotron. The target substance

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SOV/56-35-6-2/44

Coulomb Excitation of High-Energy Nuclear Levels in Even Tungsten Isotopes

consisted of natural tungsten and of samples (lead bases) which were enriched with W^{182} , W^{184} , and W^{186} . The results obtained by the investigations are shown by a number of diagrams and tables. Figure 1 shows the γ -spectrum emitted by natural tungsten at Coulomb excitations ($E_{\alpha} = 14.5$ Mev), and figure 2 shows the same for the last high-energy lines. The extrema of the curves correspond to the following lines: 511, 610, 730, 900, 1120, and 1220 kev. The line $\Delta E = 790$ kev does not occur here, but the γ -spectrum for W^{184} ($E_{\alpha} = 13.1$ Mev) shows weak but distinct maxima for $\Delta E = 790$ and 900 kev; figure 4 shows the same for W^{186} ($E_{\alpha} = 14.5$ Mev) 511 kev (intensive line), 610 and 730 (weak lines). The existence of the following excited levels was determined: W^{182} : 1.22 Mev, W^{184} : 0.90 Mev, W^{186} : 0.73 Mev. The reduced transition probabilities to the ground state $B(E2)$ calculated for each of these levels were found to be 0.051, 0.038 and 0.040 respectively (in units of $e^2 \cdot 10^{-48} \text{ cm}^4$). The assumption that these levels belong to the vibration type is discussed. The author finally thanks B.L.Birbrair,

Card 2/3

SOV/56-35-6-2/44

Coulomb Excitation of High-Energy Nuclear Levels in Even Tungsten Isotopes

L. K. Peker, and L. A. Sliv for discussing results.- There are 5 figures, 2 tables, and 15 references, 5 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tehnicheskii institut Akademii nauk SSSR
(Leningrad Physico-Technical Institute of the Academy of Sciences,
USSR)

SUBMITTED: May 26, 1958

Card 3/3

21(7)
 AUTHORS: Alkhazov, D. G., Grinberg, A. P., SOV/48-23-2-11/20
 Yerokhina, K. I., Lemberg, I. Kh.
 TITLE: Coulomb Excitation of Nuclear Levels in Spherical Even-even
 Nuclei (Kulonovskoye vozбудhdeniye yadernykh urovney v sferi-
 cheskikh chetno-chetnykh yadrakh)
 PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
 Vol 23, Nr 2, pp 223-224 (USSR)
 ABSTRACT: The present paper contains results obtained in the investigation
 of Coulomb excitation of the first level of Si, Ti, Cr; Fe,
 Ni and Zr isotopes. The targets enriched with such isotopes
 were bombarded with triple- and quadruple-charged nitrogen ions
 which had been accelerated to 15.9-35 Mev in the cyclotron. The ex-
 perimental procedure was given in a previous paper (Refs 1, 2).
 The authors calculated the stopping power dE/dx of the investi-
 gated elements for N by recalculating the range-energy curves for
 α -particles according to Longchamp (Ref 3). The stopping power
 was also determined from the range-energy curve for N ions in Ni
 according to data on investigation of stopping power in Ni. The
 measurement results are listed in a table which also contains the
 probability of transitions and the life-time τ of the excited
 states as determined by the method of Coulomb excitation. In paper (Ref 6)

Card 1/2

SOV/48-23-2-11/20

Coulomb Excitation of Nuclear Levels in Spherical Even-even Nuclei

the authors assumed a systematic increase of value τ determined by Coulomb method with respect to the values τ determined by resonance scattering. This assumption does not agree with the results obtained here. There are 1 table and 9 references, 3 of which are Soviet.

Card 2/2

24 (5), 21 (7)
AUTHORS:

Grinberg, A. P., Lemberg, I. Kh.

SOV/48-23-7-22/31

TITLE:

Specific Losses of Energy in the Stopping of Heavy Ions in
Different Substances (Udel'nyye poteri energii pri tormozhenii
tyazhelykh ionov v razlichnykh veshchestvakh)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol 23, Nr 7, pp 887-893 (USSR)

ABSTRACT:

In the investigation of Coulomb excitations of the nuclei, life
times of the excited levels of the nuclei in the range of
 10^{-12} seconds and less are determined. In using positrons and
 α -particles, this is only possible for such nuclei the nuclear-
charge number of which is higher than 50. Heavy ions must be
used to reduce the influence of the γ -background of the nuclear
reactions for nuclei with nuclear-charge numbers under 50. In
this case, it is necessary for the calculation of life times
of excited levels to know the specific losses of energy in the
stopping of the ions of C, N, etc in different substances. As the
known data are considered inaccurate, experiments were carried
out with ions of the isotopes N^{14} , C^{12} , O^{16} and $Ne^{20,22}$ on the
cyclotron of the Laboratory of the FTI for determining the

Card 1/3

Specific Losses of Energy in the Stopping of Heavy
Ions in Different Substances

SOV/48-23-7-22/31

Coulomb excitation of the nuclei of heavy ions. Three methods are indicated for calculating the amount of the specific loss of energy. The first method was developed by Longchamp. It is based on a number of theoretical investigations, and the mean charge is calculated by means of the statistic atom model by Thomas-Fermi. The second method is called the proton method; it is based on the known formula by Bethe-Bloch. The third method is the method of the mean ion charge. Here, the influence of the monovalent ions is neglected. In figure 1, the curve found experimentally for the range-energy of ions of the isotope N^{14} in stopping in nickel is compared with the curve calculated by the method of Longchamp. In figure 2, the specific loss of energy experimentally determined for the ions of the same isotope is compared with the specific losses calculated according to Longchamp and by the third method. A good agreement is to be seen in the first diagram, sometimes considerable deviations are to be seen in the second diagram. Besides, three diagrams representing the mean values of the specific energy loss of the ions of the isotopes N^{14} , C^{12} and O^{16} in the energy

Card 2/3

Specific Losses of Energy in the Stopping of Heavy
Ions in Different Substances

SOV/48-23-7-22/51

interval of 15-25 Mev in dependence on the nuclear-charge number of the stopping media, are shown. Finally, the specific energy loss of the ions of Ne^{20} is investigated, and it is ascertained that, on account of the extensive experimental results, the calculation of the life of the Coulomb-excited states does not show a big error. There are 6 figures and 9 references, 2 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR
(Physico-technical Institute of the Academy of Sciences, USSR)

Card 3/3

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S/048/59/023/012/005/009
B006/B060

24.6520

AUTHORS: Alkhazov, D. G., Grinberg, A. P., Gusinskiy, G. M.,
Lemberg, I. Kh.

TITLE: Nuclear Reactions of Multicharged Ions With Carbon and
Oxygen, and Their Influence on the Investigation of the
Coulomb Excitation of Nuclear Levels

79
PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol. 23, No. 12, pp. 1465 - 1472

TEXT: The investigation of the ion induced excitation of high-energy
nuclear levels encounters great difficulties due to intensive γ -background.
The attempt of exciting high-energy nuclear tin levels by nitrogen ions
(25 Mev) revealed a γ -background exceeding considerably the expected
 γ -emission due to Coulomb excitation. In order to clarify origin and back-
ground character, the authors investigated γ -spectra of different elements,
of their compounds and of isotopes occurring with their bombardment by
 C^{12-} , N^{14-} , O^{16-} , Ne^{20-} , and Ne^{22-} -ions. The γ -recording was carried out by

Card 1/5

Nuclear Reactions of Multicharged Ions With ⁸⁵⁸⁶¹
 Carbon and Oxygen, and Their Influence on the S/048/59/023/012/005/009
 Investigation of the Coulomb Excitation of Nuclear Levels B006/B060

means of a scintillation spectrometer joined with a multiplier (FEU-11),
 and a fifty-channel pulse analyzer. The distance between target and the
 front of the NaJ(Tl)-crystal was 2.7 mm. The 0.1 - 2 Mev region of the
 γ -spectra was investigated, and the background was determined for the
 following bombarding ion energies: C¹²(13.6 Mev), N¹⁴(11-40 Mev),
 O¹⁶(18.1 Mev), Ne²⁰(23.1 - 27.8 Mev), and Ne²²(25.8 Mev). The ions were
 accelerated in the cyclotron of LFTI (Leningrad Physicotechnical
 Institute). The most accurate γ -background spectrum investigation was
 conducted with the bombardment with nitrogen ions, proceeding from
 E_N = 15.9 Mev. In Fig. 1 the γ -spectra of a graphite and a nickel target
 are given; they are very similar. The γ -background lines 0.35, 0.51 (very
 weak), 0.59, and 1.37 Mev were observed. For E_N = 11.25 Mev the above two
 first lines were no more observable (for graphite), the two last ones were
 weaker, and the continuous background diminished. An increase in E_N caused
 intensification. For silicon bombardment with E_N = 25 Mev the background

Card 2/5

85861

Nuclear Reactions of Multicharged Ions With S/048/59/023/012/005/009
Carbon and Oxygen, and Their Influence on the B006/B060
Investigation of the Coulomb Excitation of Nuclear Levels

line 1.63 Mev, for aluminum bombardment the lines 0.69 and 0.81 Mev were observed. Fig. 2 shows the γ -spectrum with Ni⁶² bombardment by N⁴⁺ (35 Mev). Fig. 3 applies to the same for vanadium bombardment. In both spectra the 1.37 Mev background line is missing, nickel exhibits the intensive 1.19 Mev line, vanadium a 0.92 Mev line. The results are discussed and some further ones are given. For targets containing oxygen the background lines 0.51 and 1.78 Mev as well as increased intensity of the 0.59 and 1.37 Mev were observed under bombardment with nitrogen ions. When E_N is increased from 15 to 40 Mev the intensity of the 1.78 Mev line increases much faster than that of the 1.37 Mev line. Next, results of γ -background investigations when bombarding with other ions are given: ✓

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| | E γ (Mev) for reaction with | |
|-------------------------------|------------------------------------|----------------------------|
| | Carbon | Oxygen |
| C ¹² (13.6 Mev) | 0.44, 0.51, 1.63; | 0.51, ~1.0, 1.37 |
| N ¹⁴ (15.9-40 Mev) | 0.35, 0.51, 0.59, 1.37; | 0.51, 0.59, ~1, 1.37, 1.78 |
| O ¹⁶ (18.1 Mev) | 0.51, 1.37 | --- |
| Ne ²⁰ (23.1 Mev) | --- | 0.69 |
| Ne ²² (25.8 Mev) | --- | --- |

Full particulars are given of the results; the attempt is further made of explaining the various occurring lines by reactions between ion and bombarded nucleus. For example: γ -background line 1.63 Mev:

C + C = Ne²⁰ + α + 11.4 Mev (the first Ne²⁰ level has the energy of 1.63 Mev). 1.37 Mev: N + C = Mg²⁴ + α , or N + C = Na²⁴ + 2p, where Na²⁴ decays to the first excited Mg²⁴ level by β -decay (ΔE = 1.37 Mev).

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0.35 Mev: $N + C = Ne^{21} + \alpha + p$. 0.59 Mev: $N + C = Na^{22} + \alpha$. Some lines
may be explained by different reactions as for instance: 1.78 Mev:

$N + O = Al^{28} + 2p$; $N + O = Si^{28} + n + p$; $N + O = P^{28} + 2n$. Finally the
investigation possibilities of Coulomb excitation of nuclear levels are
discussed for different experimental conditions. A team under the super-
vision of A. B. Girshin participated in this work. There are 3 figures,
1 table, and 10 references: 8 Soviet.

✓

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21(8)

AUTHORS:

Alkhazov, D. G., Grinberg, A. P., SOV/56-36-1-50/62
Lemberg, I. Kh., Rozhdestvenskiy, V. V.

TITLE:

The Coulomb Excitation of Neon (Kulonovskoye возбуждениye neona)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 1, pp 322-324 (USSR)

ABSTRACT:

Such an excitation of levels can be observed not only in the target nucleus but also in the bombarding nucleus, if the latter has a sufficiently high excitation cross section. In the case of most of the work hitherto carried out in connection with Coulomb (Kulon) excitation the targets were bombarded with protons or α -particles. As, however, the nuclei H^1 and H^4 have no suitable levels, the above mentioned phenomenon has hitherto not been observed. However, if heavy ions are used in some cases, an excitation of the nuclear levels may be found in the bombarding particles. The authors investigated the Coulomb excitation of the nuclei Ne^{20} and Ne^{22} , in which case the neon nuclei were accelerated. The energy of the first excited levels of these nuclei

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amounts to 1.63 and 1.275 Mev. The cyclotron was adjusted to the acceleration of one or the other ions by variation of the magnetic field strength with unvaried frequency of the accelerating cyclotron field. As targets Be, B, C, Mg, Al, Si, $Mg^{24}O$, $Mg^{25}O$, $Mg^{26}O$, and ScO were used. According to the authors' calculations the yield of the γ -radiation connected with the Coulomb excitation of Ne^{20} or Ne^{22} must decrease considerably with an increase of the atomic number of the target nuclei. Therefore, only targets with light nuclei were used for the here discussed experiments. The γ -radiation produced by bombarding various targets with neon-ions was recorded by means of a γ -spectrometer with $NaJ(Tl)$ -crystal. Two diagrams show the spectra of γ -rays which were emitted in the case of the Coulomb excitation of the level $\Delta E = 1.63$ Mev (and $\Delta E = 1.275$ Mev respectively) during the bombardment of aluminum with Ne^{20} -ions (or by Ne^{22} -ions respectively). Similar spectra, which indicate excitation of the aforementioned neon nuclei, were found also in connection with the bombarding of the remaining nuclei, with the

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exception of boron and beryllium. In these two exceptional cases the peak with $E = 1.63$ Mev was not observed during the bombardment with Ne^{20} -ions because of the very strong γ -background. In the case of a bombardment of these targets with Ne^{22} -ions a distinctly marked peak with $E = 1.275$ Mev is observed. The mean values of $B(E2)$ are $0.041 e^2 \cdot 10^{-48} \text{ cm}^4$ for the level with $\Delta E = 1.63$ Mev of Ne^{20} and $0.025 e^2 \cdot 10^{-48} \text{ cm}^4$ for the level with $\Delta E = 1.275$ Mev of Ne^{22} . The mean life τ of these states amounts to $8.6 \cdot 10^{-13} \text{ sec}$ and $4.8 \cdot 10^{-13} \text{ sec}$ respectively. The authors thank the head of the working group A. B. Girshin, who was responsible for the undisturbed operation of the cyclotron. There are 2 figures and 7 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Institute of Physics and Technology of the Academy of Sciences, USSR)

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24.6700, 16.8100

76965
SOV/56-37-6-5/55

AUTHORS: Alkhazov, D. G., Grinberg, A. P., Gusinskiy,
G. M., Erokhina, K. I., Lemberg, I. Kh.

TITLE: Coulomb Excitation of Odd A-Nuclei by Heavy Ions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki,
1959, Vol 37, Nr 6, pp 1530-1542 (USSR)

ABSTRACT: High-lying levels in some light nuclei (Al^{27} , Sc^{45} ,
 V^{51} , Nb^{93}), which because of background could not
previously be observed when protons or α -particles
were used, have now been excited by using "heavy"
ions as bombarding particles. The "heavy" ions were
 $N^{14; 3+}$, $N^{14; 4+}$, $O^{16; 3+}$, $Ne^{20; 4+}$, and $Ne^{22; 4+}$,
at energy levels from 16 to 36 mev. The γ -radiation
formed during the bombardment of the target with
ions was registered with the aid of a scintillation
spectrometer (cf. D. G. Alkhazov, D. S. Andreev,
K. I. Erokhina, I. Kh. Lemberg, Zhur. eksp. i teoret.
fiz., 33, 1347, 1958). The calibration of the

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spectrograph was done according to the γ -lines of Hg^{203} (279.5 kev), Cs^{137} (661 kev), Zn^{65} (1,120 kev), and Co^{60} (1,170 and 1,332 kev). The reduced probability of the excitation was calculated with the aid of the following equation:

$$B(E2) = 0.555 \cdot 10^{-10} \frac{Z_1 S_f (1 + \alpha_f) M Z_2^2 dE}{\alpha_f^2 m_1^2 \eta^2} \left(\int_0^{E_{max}} (E - \Delta E) I_2(E) dE \right)^{-1} \quad (1)$$

(where Z_1 is the ion charge in the beam outside the cyclotron; α_f is the total coefficient of internal conversion; S_f is the number of γ -quanta registered at the peak of the total energy; M is the molecular weight of the substance comprising the target; Z_2 is the nuclear charge of the atom under investigation (i.e., in the target); $dE/d\rho x$ are the specific losses of the ion energy in the target (in mev/(mg/cm²)); η is the relative content of a given isotope

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in the element under investigation; ϵ_r is the ratio of the number of γ -quanta registered at the peak of the total energy to the total number of γ -quanta falling on NaI(Tl) crystal; ω is the relative solid angle; A_γ is the portion of γ -quanta passing through the target and absorbed by the medium between the target and the crystal (0.3 mm Cu, 1.3 mm Al, 1 mm MgO, 0.05 mm Pb, and 0.05 mm mica); μ is the reduced mass; n is the number of atoms of the element under investigation in the target; E is the collision energy; ΔE is the energy of the excited level; $f_2(\xi)$ is function of coulomb excitation; ξ is parameter that is defined by the relation

$$\xi = 0.1575 Z_1 Z_2 \sqrt{\mu} (1/\sqrt{E - \Delta E} - 1/\sqrt{E});$$

and Z_1 is the nuclear charge of the bombarding particle). The analysis showed that some of the γ -lines observed

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